

Claims:

1. An insert for use in a beverage preparation machine of a type comprising a brew head suitable for receiving a rigid or semi-rigid cartridge, the brew head comprising an upwardly directed inlet for supplying water to the brew head, a downwardly directed outlet for outflow of beverage produced by the machine, and a closure mechanism moveable between open and closed configurations, the insert comprising a receptacle and sealing means, the receptacle having an opening through which, in use, a quantity of beverage ingredients may be loaded into the receptacle, a lower portion of the insert comprising an inlet and an outlet, wherein, in use, on insertion of the insert into the brew head of the beverage preparation machine and movement of the closure mechanism into the closed position the sealing means is contactable with, and sealable against, the brew head to thereby close the opening of the receptacle to define a brewing volume containing the quantity of beverage ingredients, and on inserting the insert into the brew head the inlet and outlet of the insert are arranged to communicate respectively with the inlet and outlet of the brew head such that, in use, water from the inlet of the brew head passes upwardly through the inlet of the insert into the brewing volume and such that beverage produced from the water and the quantity of beverage ingredients passes downwardly through the outlet of the insert to flow out of the outlet of the brew head.
2. An insert as claimed in claim 1 wherein the quantity of beverage ingredients loaded in use into the receptacle are loose.

3. An insert as claimed in claim 2 wherein the insert comprises filtering means between the brewing volume and the outlet of the insert.

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4. An insert as claimed in claim 1 wherein the quantity of beverage ingredients loaded in use into the receptacle are contained in a container comprising filtering means.

10 5. An insert as claimed in claim 4 wherein the container is flexible.

6. An insert as claimed in claim 4 or claim 5 wherein the container is formed at least in part from a filter paper or
15 filtering membrane.

7. An insert as claimed in any of claim 4 to 6 wherein the container is a filter bag.

20 8. An insert as claimed in claim 4 wherein the container is a rigid or semi-rigid cartridge.

9. An insert as claimed in claim 8 wherein the cartridge is any of semi-spherical, cylindrical, round or square in
25 shape.

10. An insert as claimed in any preceding claim wherein the opening of the receptacle is upwardly directed.

30 11. An insert as claimed in any preceding claim wherein the sealing means is located on an upper portion of the insert.

12. An insert as claimed in claim 11 wherein the sealing means is located on an upper rim of the insert.

13. An insert as claimed in any of claims 1 to 11 wherein
5 the sealing means is separate from the receptacle.

14. An insert as claimed in any preceding claim wherein the sealing means comprises a ring seal for sealing around a periphery of the brewing volume.

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15. An insert as claimed in claim 14 wherein the sealing means comprises an O-ring.

16. An insert as claimed in any preceding claim wherein the
15 sealing means is formed from an elastomeric material.

17. An insert as claimed in any preceding claim wherein the receptacle is cup-shaped and wherein the cup is upwardly or downwardly directed when the insert is located in said
20 machine.

18. An insert as claimed in any preceding claim wherein the insert is rigid or semi-rigid such that pressure applied, in use, to the insert by the closure mechanism of the beverage
25 preparation machine on closing of said closure mechanism squeezes the insert with sufficient force for the sealing means to seal against the brew head.

19. An insert as claimed in claim 18 wherein the insert is
30 sealable against a viewing window of the closure mechanism.

20. An insert as claimed in any preceding claim wherein the insert is rigid or semi-rigid such that pressure applied, in use, to the insert by the closure mechanism of the beverage preparation machine on closing of said closure mechanism
5 seals a lower surface of the insert against the inlet of the brew head of the beverage preparation machine.

21. An insert as claimed in any preceding claim wherein the insert is formed as one piece.

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22. An insert as claimed in any of claims 1 to 20 wherein the insert is formed from more than one piece.

23. An insert as claimed in any preceding claim wherein the
15 insert is disc-shaped.

24. An insert as claimed in any preceding claim formed from plastic.

20 25. An insert as claimed in any preceding claim wherein the inlet and outlet of the insert are coplanar.

26. An insert as claimed in any preceding claim further comprising an aperture for receiving on insertion of the
25 insert in the beverage machine a window of a bar code reader or RFID reader of said machine.

27. An insert as claimed in claim 26 wherein the aperture is coplanar with the inlet and outlet of the insert.

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28. An insert as claimed in any preceding claim wherein the inlet of the insert is located at or near a periphery of the

insert and the outlet of the insert is located at a centre of the insert.

29. An insert as claimed in any preceding claim wherein, in
5 use, flow through the insert is from the inlet to the outlet.

30. An insert as claimed in claim 29 wherein, in use, flow
through the insert is generally in an inward direction from
10 the inlet to the outlet.

31. An insert as claimed in any preceding claim further
comprising means for rotatable attaching the insert to the
beverage preparation machine.
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32. An insert as claimed in claim 31 wherein the rotatable
means allows the insert to be rotated on closure of the
closure mechanism into a horizontal orientation such that a
lower surface of the insert is sealed against the inlet of
20 the brew head.

33. An insert as claimed in claim 31 or claim 32 wherein
the rotatable means comprises one or more legs which are
attachable to, and rotatable about, one or more pivot points
25 of the brew head.

34. An insert as claimed in any preceding claim further
comprising coding means for controlling operation of said
beverage preparation machine.
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35. An insert as claimed in claim 34 wherein the coding means comprises a bar code or radio frequency identification device (RFID).

5 36. An insert as claimed in any preceding claim wherein the insert is disposable.

37. An insert as claimed in claim 36 wherein the inlet and/or outlet of the insert are initially closed by means of
10 a frangible membrane.

38. An insert as claim in any of claims 1 to 35 wherein the insert is reusable.

15 39. An insert as claimed in claim 38 wherein the opening of the receptacle may be closed by means of a lid.

40. An insert as claimed in claim 39 wherein the lid is a push or slide fit with the receptacle.

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41. A beverage preparation system comprising a beverage preparation machine and an insert for use in said machine, said insert being as claimed in any preceding claim.

25 42. A beverage preparation system as claimed in claim 41 wherein the beverage preparation machine comprises a brew head suitable for receiving a rigid or semi-rigid cartridge, the brew head comprising an upwardly directed inlet for supplying water to the brew head and a downwardly directed
30 outlet for outflow of beverage produced by the machine.

43. A beverage preparation system as claimed in claim 42 wherein the inlet of the brew head is located at or near a periphery of the brew head and the outlet of the brew head is located at the centre of the brew head.

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44. A beverage preparation system as claimed in claim 42 or claim 43 wherein, on insertion of the insert into the brew head, the inlet and outlet of the insert lie on top of the upwardly directed inlet and downwardly directed outlet orifices of the brew head.

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45. A beverage preparation system as claimed in any of claims 42 to 44 wherein the brew head of the beverage preparation machine comprises a closure mechanism moveable between an open configuration in which the insert can be inserted into the brew head and a closed configuration in which the insert is squeezed by the closure mechanism with sufficient force for the sealing means of the insert to seal against the brew head to close the opening of the receptacle.

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46. A beverage preparation system as claimed in any of claims 42 to 44 wherein the brew head of the beverage preparation machine comprises a closure mechanism moveable between an open configuration in which the insert can be inserted into the brew head and a closed configuration in which the insert is sealed against the inlet of the brew head of the beverage preparation machine.

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30 47. A beverage preparation system as claimed in any of claims 42 to 46 wherein the brew head comprises a fixed lower part and a rotatable upper part, the fixed lower part

comprising the brew head inlet and outlet, the upper part being rotatable from an open position in which the insert can be inserted into the brew head and a closed position in which the insert is engaged between the fixed lower part and
5 the rotatable upper part.

48. A beverage preparation system as claimed in claim 47 wherein the insert is a rotatable attachment to the brew head such that rotation of the upper part of the brew head
10 from the open to the closed position rotates the insert into contact with the fixed lower part.

49. A beverage preparation system as claimed in claim 47 wherein the insert is locatable directly onto the fixed
15 lower part of the brew head when the upper part of the brew head is in the open position.

50. A beverage preparation system as claimed in any of claims 41 to 49 wherein the beverage preparation machine
20 comprises a reader for detecting a bar code or radio frequency identification device (RFID) located on the insert.

51. A beverage preparation system as claimed in any of
25 claims 41 to 50 further comprising a quantity of beverage ingredients.

52. A beverage preparation system as claimed in claim 51 wherein the quantity of beverage ingredients is contained in
30 a container comprising filtering means.

53. A beverage preparation system as claimed in claim 51 or claim 52 wherein the beverage ingredients are selected from the group containing roast and ground coffee, leaf tea, powdered coffee, powdered tea, creamer, cappuccino mix,
5 chocolate and liquid chocolate, coffee, tea and milk.

54. A beverage preparation system as claimed in claim 52 or claim 53 wherein the container is flexible.

10 55. A beverage preparation system as claimed in any of claims 52 to 54 wherein the container is formed at least in part from a filter paper or filtering membrane.

56. A method of dispensing a beverage using a beverage
15 preparation machine comprising a brew head suitable for receiving a rigid or semi-rigid cartridge, the brew head comprising an upwardly directed inlet for supplying water to the brew head and a downwardly directed outlet for outflow of beverage produced by the machine, the method comprising
20 the steps of:

opening a closure mechanism of the beverage preparation machine;

inserting an insert into the brew head, the insert being as claimed in any of claims 1 to 40 and containing a
25 quantity of beverage ingredients;

closing the closure mechanism to squeeze the insert with sufficient force such that the sealing means of the insert seals against the brew head to close the opening of the receptacle;

30 operating the beverage preparation machine to pass water upwardly from the inlet of the brew head through the inlet of the insert into the brew volume of the insert;

dispensing a beverage formed in the brew volume from the water and the beverage ingredients downwardly through the outlet of the insert and the outlet of the brew head.